Econ 219B Psychology and Economics: Applications (Lecture 8)

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Outline

- 1. Roadmap into Finance
- 2. Empirical Corporate Finance in a Nutshell
- 3. Accounting Data
- 4. Analysts
- 5. Earnings Forecasts

1 Roadmap into Finance

- Finance divided into two subfields:
 - 1. Corporate Finance.
 - Decisions taken within a company
 - Relates to Labor Economics, Contract Theory, Economics of Organizations

- 2. Asset Pricing.
 - Trade of Shares of the company
 - Relates to Math Econ and General Equilibrium

- Three type of actors in finance:
 - Managers, CEOs, board, shareholders within a firm [Corporate]

 Investors: individual (ETrade) and institutional (mutual fund, hedge funds, pension funds) [Asset Pricing]

- Analysts, accountants, auditors [Accounting]

2 Empirical Corporate Finance in a Nutshell

2.1 CEO pay

- Jensen and Murphy (1990): "Are CEOs paid like Bureaucrats?"
- \$1,000 increase in firm value increases CEO pay by only \$3.5
- CEO does not have enough incentives (compare to Contract Theory)

• 1990s: Dramatic increase of CEO pay and stock option grants • CEOs not bureaucrats, but what are they?

- Problems:
 - If company does badly, options are repriced –> lose incentives
 - Bertrand-Mullainathan (2004): Rent seeking by CEO to get higher pay
 - Bertrand-Mullainathan (2002): CEOs rewarded for luck
 - Why do rank-and-file wokers get options?

- What do CEOs do if free?
- Bertrand and Mullainathan (2004, JPE): Enjoying the Quiet Life
- Anti-takeover laws.
- Business combination laws that make takeovers more difficult: most stringent; moratorium (3-5 yrs) on assets sales, mergers.
- Exploit variation in implementation across states
- Diff-in-Diff outcome y

$$y_{i,t} = \alpha + \beta d_{i,t} + \eta_i + \varphi_t + \varepsilon_{i,t}$$

where *i* is state, *t* is year and $d_{i,t} = 1$ if antitakeover law is in place in state *i* in year *t*

 TABLE 1

 State Antitakeover Legislation

Business Combination	Fair Price	Control Share Acquisition
Arizona (1987)	Arizona (1987)	Arizona (1987)
Connecticut (1989)	Connecticut (1984)	Hawaii (1985)
Delaware (1988)	Georgia (1985)	Idaho (1988)
Georgia (1988)	Idaho (1988)	Indiana (1986)
Idaho (1988)	Illinois (1984)	Kansas (1988)
Illinois (1989)	Indiana (1986)	Louisiana (1987)
Indiana (1986)	Kentucky (1989)	Maryland (1988)
Kansas (1989)	Louisiana (1985)	Massachusetts (1987)
Kentucky (1987)	Maryland (1983)	Michigan (1988)
Maine (1988)	Michigan (1984)	Minnesota (1984)
Maryland (1989)	Mississippi (1985)	Mississippi (1991)
Massachusetts (1989)	Missouri (1986)	Missouri (1984)
Michigan (1989)	New Jersey (1986)	Nebraska (1988)
Minnesota (1987)	New York (1985)	Nevada (1987)
Missouri (1986)	North Carolina (1987)	North Carolina (1987)
Nebraska (1988)	Ohio (1990)	Oklahoma (1987)
Nevada (1991)	Pennsylvania (1989)	Oregon (1987)
New Jersey (1986)	South Carolina (1988)	Pennsylvania (1989)
New York (1985)	South Dakota (1990)	South Carolina (1988)
Oklahoma (1991)	Tennessee (1988)	South Dakota (1990)
Ohio (1990)	Virginia (1985)	Tennessee (1988)
Pennsylvania (1989)	Washington (1990)	Utah (1987)
Rhode Island (1990)	Wisconsin (1985)	Virginia (1988)
South Carolina (1988)		Wisconsin (1991)
South Dakota (1990)		Wyoming (1990)
Tennessee (1988)		, 0
Virginia (1988)		
Washington (1987)		
Wisconsin (1987)		
Wyoming (1989)		

SOURCE. - Annotated State Codes, various states and years.

(see table 1 for a list).⁸ Business combination laws impose a moratorium (three to five years) on specified transactions between the target and a raider holding a specified threshold percentage of stock unless the board votes otherwise *before* the acquiring person becomes an interested shareholder. Specified transactions include sale of assets, mergers, and business relationships between raider and target. For example, the New York statute prohibits, in addition to any merger and consolidation, the sale, lease, exchange, mortgage, pledge, transfer, or other disposition of the assets of the target company to the interested shareholder. The New York law also forbids the adoption of any plan or proposal for the liquidation or dissolution of the target firm, the reclassification of se-

⁸ Other (non-business combination) takeover laws are described in Bertrand and Mullainathan (1999*b*). These other laws are thought to be, at best, marginally effective. Event study evidence has borne out this belief, showing that business combination laws resulted in the biggest stock price drop (Karpoff and Malatesta 1989). We also have replicated the analysis below for these other laws and also found little effect.

CORPORATE GOVERNANCE

TABLE 3EFFECTS OF BUSINESS COMBINATION LAWS ON BLUE-COLLAR WAGES (N=191,211)

		Dependent Variable: Log(Wage)				
	(1)	(2)	(3)	(4)	(5)	
BC	.013	.013	.013	.012		
	(.005)	(.005)	(.005)	(.005)		
State-year		.436	.436	.436	.439	
		(.013)	(.061)	(.061)	(.062)	
Log(age)			.037	.038		
			(.005)	(.005)		
Return on capital			001	001		
			(.000)	(.000)		
Log(employment)			016	· /		
			(.003)			
Before ⁻¹					.004	
					(.004)	
Before ⁰					.009	
					(.004)	
After ¹					.015	
					(.006)	
After ²⁺					.019	
					(.007)	
Plant fixed effects?	yes	yes	yes	yes	yes	
State of incorporation	,	,	,	,	,	
fixed effects?	ves	ves	ves	ves	ves	
Year fixed effects?	ves	ves	ves	ves	ves	
Log(base year employ-	1	/	/	/	/	
ment) × year fixed						
effects?	no	no	no	ves	no	
R^2	836	836	836	836	836	
	.000	.000	.000	.000	.000	

NOTE.—The dependent variable is the log of production worker wages. Plant-level data are taken from the LRD-Compustat match for the years 1976–95. *BC* is a dummy variable that equals one if a business combination statute has been passed. State-year refers to the mean log production worker wage in the plant's state of location in that year (excluding the plant itself). Before⁻¹ is a dummy variable that equals one if the plant is incorporated in a state that will pass business combination legislation in one year. Before⁶ is a dummy variable that equals one if the plant is incorporated in a state that passes business combination legislation this year. After¹ is a dummy variable that equals one if the plant is incorporated in a state that passed business combination legislation one year ago. After¹⁴ is a dummy variable that equals one if the plant is incorporated in a state that passed business combination legislation two years ago or more. Standard errors (in parentheses) are corrected for clustering of the observations at the state of location level.

of serial correlation in the data (see Bertrand, Duflo, and Mullainathan 2002).¹⁵

Column 1 of table 3 estimates the basic impact of the state laws on the mean wage of production workers in a protected plant. Mean bluecollar wages significantly go up by 1.3 percent after the business combination laws are passed. We investigate the robustness of this wage effect in the rest of the table. First, we control for state of location–specific shocks. In column 2, we include mean wage in the state of location of

¹⁵ In regressions not reported here, we also allowed for correlated error terms at the state of incorporation level and found similar results.

Findings for different *ys*:

- Blue-collar wages rise by 1%
- White-collar wages rise by 4%
- Rate of plant destruction falls.
- Rate of plant creation falls!
- Total factor productivity decreases by 1%
- Return on capital decreases by 1%

2.2 Board

- Board of directors controls the CEO
- Does it? CEO chooses most members of Board
- Ergo: CEO chooses own controllers (and pay)
- (Politicians also choose own pay)

- Corporate governance literature
- Which board composition is better? Outsiders or insiders?
 - Pro-outsiders: more independent
 - Pro-insiders: more stakes, more time, more knowledge

2.3 Mergers

- Company expands by:
 - building new plant
 - taking over another company

- Why CEOs want to expand? (Andrade-Mitchell-Stafford, *JEP* 2001)
 - 1. Synergies (economies of scale).
 - 2. Self-serving attempts to overexpand (empire-building, hubris).
 - 3. Advantages of diversification (e.g. internal capital market; diversification for undiversified managers)

- Why mergers in particular?
 - 1. Attempt to create market power (forming monopolies)
 - 2. Incompetent target management
 - 3. Response to deregulation.
 - 1973: airlines.
 - 1984 and 1996: broadcasting.
 - 1984: entertainment.
 - 1978: natural gas.

Importance / Significance of mergers

- Reallocation of resources within and across industries
- 1995: Value of M&A's = 5% GDP and = 48% nonresidential gross investment
- For a firm an "extraordinary event" often doubling its size within months; large organizational uncertainty; movement of human capital

Stylized facts

1. Mergers occur in waves.

- 1920s/1930s: Mergers for market power.
- 1960s: Mergers for diversification (def.: 2-digit SIC).
 - Decreasing since 1960s.
 (1970s: 70%, 1980s: 60%, 1990s: 52%)
 - Ultimately failures.
- 1980s: Mergers for market discipline.
 - 1980s: Half of all major US corporatations received a takeover offer.
 - 14% hostile (only?); 4% in 1990s. (*hostile* = target publicly rejects or acquirer describes it as unsolicited and unfriendly)
- late 1980s and 1990s: Mergers of deregulation.

2. Within a wave, mergers occur in industry clusters.

- 1970s: Metal Mining, Real Estate, Oil & Gas, Apparel, Machinery
- 1980s: Oil & Gas, Textile, Misc. Manufacturing, Non-Depository Credit, Food
- 1990s: Metal Mining, Media & Telecommunication, Banking, Real Estate, Hotels

3. Announcement Effects

- How does stock market react to announcement of merger?
- Regression:

$$p_{t+s,k}-p_{t-s',k}=lpha+\gamma d_{t,k}+arepsilon_{t,k}$$
 with $d_{t,k}=1$ if firm announces merger

- Event Study
 - Average stock market reaction at announcement: measure of value creation / destruction.
 - Event windows: (a) short: 3 days (-1 to +1) and
 (b) long: several days prior to announcement to close of merger

- Abnormal return 1973-1998: value creation (?), entirely accruing to target shareholders (!!)
 - Target:
 positive, significant (16%) for -/+1
 positive, significant (24%) for -20/close
 - Acquirer:
 negative, insignificant (-0.7%) for -/+1
 negative, insignificant (-3.8%) for -20/close
 - Combined:
 positive, significant (1.8%) for -/+1
 positive, insignificant (1.9%) for -20/close
- Magnitude
 - Median target value $230m \implies 16\% = 37m$
 - Average annual return publicly traded companies = $12\% \implies 16\%$ normally over 16 months
- BUT: -5% long-term (3-year) returns for acquirer

2.4 Financing

- Company wants to expand (new plant, investment)
- New plant financed with:
 - cash flow coming from previous years
 - issue new stock
 - issue debt (bond)
 - pay less dividend

Most investment financed by retained earnings and debt. (Sample of 360 firms over 10 years -> only 80 equity issues, i.e. 2% per year.)
1980: retained earnings (60%), debt (24%), increases in accounts payable (12%). Very little financing with new equity (4%).

3 Data Download

- Company-level data easily available online from WRDS
- http://wrds.wharton.upenn.edu/
- Compustat North America, Industrial Annual
- Accounting information:
 - Revenue (Sales)
 - Profit
 - Investment in plant and equipment
 - Research and Development
 - Debt

- ExecuComp.
- Compensation of top 5 executives
- Wage vs. options

4 Analysts

- Information on performance of companies:
 - quarterly earning announcement
 - accounting books
 - media interviews

- What is right valuation of company?
 - need forecasts of future profitability
 - (Stock price = Discounted sum of future cash flows)
 - Hard!

- Analysts. Process information on companies and make it available (for a fee)
 - Sell-side. Work for brokerage firm (investment bank)
 - Buy-side. Work for mutual funds
 - Sell-side analysts:
 - * more likely to have conflict of interest (Inv. Bank selling shares of target company)
 - * data is mostly available for (IBES)

- Analysts generate three main outputs:
 - 1. Earning forecasts $\hat{e}_{t,k}$
 - Dollar earning per share of company

- Quarterly or annual
- Year 1, 2, 3, (4) into the future
- 2. Long-term "growth rate" of earnings g_e
- 3. Stock price recommendations:
 - Strong sell
 - Sell
 - Hold
 - Buy
 - Strong buy
- In theory, stock recommendation come out of combining (1) and (2) with stock price

• Very simple forecasting model:

$$\hat{p}_{t,k} = e_{t,k} + \frac{\hat{e}_{t+1,k}}{1+r} + \frac{\hat{e}_{t+2,k}}{(1+r)^2} + \dots + \sum_{t=0}^{\infty} \frac{1}{(1+r)^{5+t}} \hat{e}_{t+5,k} * g_e$$

- Compare $\hat{p}_{t,k}$ with stock price $p_{t,k}$
- Buy or Strong Buy if $\hat{p}_{t,k} > p_{t,k}$

- In practice:
 - individuals investors look at stock recommendations (simple)
 - insitutional investors use earning forecasts (more quantitative)

5 Earnings Forecasts

- Focus on earnings and earnings forecasts:
 - Quarterly earnings = Quarterly profit: accounting measure of company success
 - Quarterly earning forecast = Expectation about company performance
 - When company announces quarterly earnings, investors react at difference between earning and forecast
 - Look at stock price reaction as function of surprise

- Data on quarterly earnings $e_{t,k}$:
 - IBES (street earnings, 1984-)
 - Compustat (GAAP earnings, 1960s-)

- Data on quarterly earning forecasts by analysts, $\hat{e}_{t,k}$:
 - IBES (1984-)
 - First Call (1992-)

- Match the two sources
- Rest of lecture: use problem set text